Warehouse Workers Justice Center, dba Warehouse Workers for Justice
Quality Assurance Statement

For this proposed program, WWJ intends to use PurpleAir monitors, a commercially available and widely-used air quality monitoring technology. PurpleAir monitors have two built-in sensors operating simultaneously to allow users to check for reliability. Before placement in the community, the air quality monitors will undergo initial testing and validation. As many monitors as possible will be collocated at or near the existing EPA pm2.5 monitor in Joliet while the remaining monitors will be collocated with each other elsewhere and rotated through the EPA collocation site. This preliminary testing will allow for identification of faulty units and the determination of intra-unit variability. We plan to keep one monitor located near the EPA sensor throughout the project as a control to monitor long-term performance.

When analyzing the data, we plan to apply the cleaning methods indicated by Barkjohn, Gantt, and Clements.[1] Moreover, cross-checking the data collected by both sensors is especially useful in determining whether a significant increase in concentration is most likely real or an outlier. As we did in the data analysis for our previous air quality testing work, we also analyzed the data from each sensor for spikes greater than three standard deviations above the mean. If both sensors show the same spikes, the data will be kept. If only one sensor shows the spike/trend, the value will be considered an outlier and eliminated from data analysis. The latest EPA corrections for the PurpleAir Data will also be applied in order to account for the way PurpleAir measures PM2.5 concentrations compared to the EPA AirNow monitors.[2]

[1]K.K Barkjohn, B. Gantt, and A. L. Clements, *Development and application of a United States-wide correction for PM2.5 data collected with the PurpleAir sensor*. Atmos. Meas. Tech., 14, 4617–4637, 2021.
[2]K.K. Barkjohn, et al., *Sensor Data Cleaning and Correction: Application on the AirNow Fire and Smoke Map.* Paper presented at the American Association for Aerosol Research Annual Conference, Oct. 2021.